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recipient, and said one or more information elements a2, ..., an comprising dispatch-related information and comprise at least the following elements:

A¹
omit
a2 - a time indication associated with said dispatch;
and

a3 - information describing the destination of said dispatch,

and wherein at least said information element a2 is provided in a manner that is resistant to or indicative of tampering by either of said sender and said recipient;

means for associating said dispatch-related information with said element a1 by generating authentication-information comprising a representation of at least said elements a1, a2 and a3, said representation comprising a set of one or more elements, each comprising a representation of one or more elements of said set A; and

means for securing at least part of said authentication-information against tampering of at least said sender.

65². Apparatus according to claim 64¹, wherein said element a2 comprises at least one element selected from the group consisting of the date associated with said dispatch, and the time associated with said dispatch.

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³~~66~~. Apparatus according to claim ¹~~64~~ or ²~~65~~, wherein said dispatch-related information comprises at least one element selected from the group consisting of a delivery indication associated with said dispatch, the number of pages transmitted, page numbers, an indication of identification associated with said sender, an indication of identification associated with said recipient, said dispatch duration, integrity information, an indication of dispatch identification associated with said dispatch, an indication of identification associated with said apparatus, a heading message, and a trailing message.

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~~67. Apparatus according to claim 64, wherein at least one of the means for associating and for securing comprises means for generating a new set B, said set B comprising one or more information elements b_1, \dots, b_m , each element b_i comprising a representation of a subset S_i , said representation being expressive as a function F_i of the elements of said subset S_i , where said subset S_i comprises a digital representation of at least one element of said set A, and where said functions F_i can be different.~~

⁴~~68~~. Apparatus according to claim ¹~~64~~, wherein the elements of said authentication-information have a form selected from the group consisting of the following forms: a

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paper document, microfiche and electronic information, and where each of said elements can have different form.

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~~69~~. Apparatus according to claim ~~64~~¹, wherein said element a1 is provided from the sender by electronic means.

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~~70~~. Apparatus according to claim ~~67~~¹, wherein said authentication-information comprises a representation of at least part of said new set B.

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~~71~~. Apparatus according to claim ~~69~~⁵, wherein said electronic means comprises a combination of at least one of the following : a communication network, a scanning device, a dispatcher, and a computer.

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~~72~~. Apparatus according to claim ~~64~~¹ or ~~71~~⁷, wherein said dispatcher comprises at least one element selected from the group consisting of a facsimile machine, a modem, a network interface card (NIC), a computer, a communication line, a communication network, an E-Mail system, an EDI system, and a message transmission forwarding service. |

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~~73~~. Apparatus according to claim ~~64~~¹, comprising means for authenticating the identity of at least one member selected from the group consisting of said sender, said recipient, an agent of said sender, and an agent of said recipient.

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~~74~~. Apparatus according to claim ~~64~~¹, comprising means for providing said dispatched information to said dispatcher for electronic transmission to said recipient.

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~~75~~. Apparatus according to claim 64, and comprising at least part of said dispatcher.

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~~76~~. Apparatus according to claim ~~64~~¹, and comprising means for generating selected elements of said set A.

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~~77~~. Apparatus according to claim ~~64~~¹, wherein said element a3 comprises at least one element selected from the group consisting of an address associated with said dispatch, an address associated with said recipient, and an indication of identification associated with said recipient.

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~~78~~. Apparatus according to claim ~~64~~³, wherein said delivery indication comprises an indication of identification associated with said recipient.

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~~79~~. Apparatus according to claim ~~64~~¹, comprising means for providing an output comprising a representation of at least part of said authentication-information.

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~~80~~. Apparatus according to claim ~~64~~¹, wherein said means for securing comprises secure storage means for storing at least part of said authentication-information.

¹⁷
~~81~~. Apparatus according to claim ~~64~~²⁴¹, wherein at least one member selected from the group consisting of said function

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Fi and at least one information element of said new set B, is unknown at least to said sender.

¹⁸~~82~~. Apparatus according to claim ⁶⁴~~67~~ or 81, wherein said new set B comprises a verifiable digital signature of said subset Si.

¹⁹~~83~~. Apparatus according to claim ¹⁸~~82~~, comprising a corresponding verification means for said verifiable digital signature, for authenticating at least one of the following: at least one element of said subset Si, and the originator of said digital signature.

²⁰~~84~~. Apparatus according to claim ¹~~64~~, ~~67~~ or 77, wherein said set A comprises a link information element through which other elements selected from the group consisting of said set A and the authentication-information are linked.

²¹~~85~~. Apparatus according to claim ⁶⁴~~67~~, wherein said function Fi has the property that it is substantially difficult to find a set S' comprising at least one information element, said set S' being different from said subset Si and yet can be used instead, such that applying said function Fi to said set S' will yield said element bi, i.e., such that $Fi(S')=bi$.

²²~~86~~. Apparatus according to claim ⁶⁴~~67~~, wherein said function Fi comprises at least one reversible function, comprising means for generating a set C which comprises one or

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more information elements c_1, \dots, c_k , where said set C is expressive as a function I of at least part of said information element b_i , and said function I comprising the inverse function of said reversible function .

87. Apparatus according to claim 64 or 67, comprising means for verifying the authenticity of an information element purported to match a corresponding element of said set A, said verification means comprising means for comparing a representation of said purported information element with a representation of at least part of said authentication-information to determine if they match.

88. Apparatus according to claim 67, comprising means for verifying the authenticity of a set S_i' comprising one or more information elements which are purported to match the corresponding elements of said subset S_i , said verification means comprising:

means for generating a new information element b_i' comprising a representation of said set S_i' which is expressive as said function F_i of the elements of said set S_i' ; and

means for comparing a representation of said element b_i' with a representation of said element b_i to determine if they match.

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17 25⁸⁹. Apparatus according to claim ⁴⁴61, wherein said function Fi comprises one or more functions.

26⁹⁰. Apparatus according to claim ¹⁸82, wherein said digital signature is generated according to a scheme selected from the group consisting of secret-key (symmetric) cryptosystems and public-key cryptosystems.

E 27⁹¹. Apparatus according to claim ⁴⁹67, wherein said new set B comprises an element generated according to a Time Stamping Service scheme.

28⁹². Apparatus according to claim ¹64 or ¹67, wherein the means for associating is combined with the means for securing.

29⁹³. Apparatus according to claim ¹64, wherein said apparatus is associated with a party other than said sender, or is resistant to or indicative of tampering by at least said sender.

30⁹⁴. A method for authenticating that certain information has been transmitted from a sender via a dispatcher to a recipient, comprising the steps of:

providing a set A comprising a plurality of information elements a1, ..., an, where said information element a1 is originated from the sender and comprising the contents of the information being electronically transmitted to said recipient, and said one or more information elements a2, ..., an

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comprising dispatch-related information and comprise at least the following elements:

a2 - a time indication associated with said dispatch;
and

a3 - information describing the destination of said dispatch,

and wherein at least said information element a2 is provided in a manner that is resistant to or indicative of tampering by either of said sender and said recipient;

associating said dispatch-related information with said element a1 by generating authentication-information comprising a representation of at least said elements a1, a2 and a3, said representation comprising a set of one or more elements, each comprising a representation of one or more elements of said set A; and

securing at least part of said authentication-information against tampering of at least said sender.

31 95. A method according to claim 9A, wherein said dispatch-related information comprises at least one element selected from the group consisting of a delivery indication associated with said dispatch, the number of pages transmitted, page numbers, an indication of identification associated with said sender, an indication of identification associated with said recipient, said dispatch duration,

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integrity information, an indication of dispatch identification associated with said dispatch, an indication of identification associated with said authenticator, a heading message, and a trailing message.

32³⁰ 96. A method according to claim 94, comprising the step of authenticating the identity of at least one member selected from the group consisting of said sender, said recipient, an agent of said sender, and an agent of said recipient.

33³⁰ 97. A method according to claim 94, wherein the elements of said authentication-information have a form selected from the group consisting of the following forms: a paper document, microfiche and electronic information, and where each of said elements can have different form.

34³⁰ 98. A method according to claim 94, wherein said element a1 is provided from the sender by electronic means.

99. A method according to claim 94, wherein at least one of the steps of associating and securing comprises the step of generating a new set B, said set B comprising one or more information elements b1, ..., bm, each element bi comprising a representation of a subset Si, said representation being expressive as a function Fi of the elements of said subset Si, where said subset Si comprises a digital representation of at least one element of said set A, and where said functions Fi can be different.

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35 ~~100~~³⁴. A method according to claim ~~98~~³⁴, wherein said electronic means comprises a combination of at least one of the following : a communication network, a scanning device, a dispatcher, and a computer.

34 ~~101~~^{36 35}. A method according to claim ~~94~~³⁶ or ~~100~~³⁵, wherein said dispatcher comprises at least one element selected from the group consisting of a facsimile machine, a modem, a network interface card (NIC), a computer, a communication line, a communication network, an E-Mail system, an EDI system, and a message transmission forwarding service.

37 ~~102~~³⁶. A method according to claim ~~98~~³⁶, wherein said authentication-information comprises a representation of at least part of said new set B.

38 ~~103~~³⁶. A method according to claim ~~94~~³⁶, comprising the step of providing said dispatched information to said dispatcher for electronic transmission to said recipient.

39 ~~104~~³⁶. A method according to claim ~~94~~³⁶, wherein said element a2 comprises at least one element selected from the group consisting of the date associated with said dispatch, and the time associated with said dispatch.

40 ~~105~~³⁶. A method according to claim ~~94~~³⁶, comprising the step of generating selected elements of said set A.

41 ~~106~~³⁶. A method according to claim ~~94~~³⁶, wherein said element a3 comprises at least one element selected from the group

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consisting of an address associated with said dispatch, an address associated with said recipient, and an indication of identification associated with said recipient.

42 ~~107~~³¹. A method according to claim ~~95~~³¹, wherein said delivery indication comprises an indication of identification associated with said recipient.

43 ~~108~~³⁶. A method according to claim ~~94~~³⁶, comprising the step of electronically transmitting said dispatched information to said recipient.

44 ~~109~~³⁶. A method according to claim ~~94~~³⁶, comprising the step of providing an output comprising a representation of at least part of said authentication-information.

45 ~~110~~⁴⁴. A method according to claim ~~109~~⁴⁴, wherein said step of providing an output provides said output to a party selected from the group consisting of said sender, said recipient, an arbitrator, and a legal authority.

46 ~~111~~³⁶. A method according to claim ~~94~~³⁶, wherein the step of securing stores at least part of said authentication-information in a secure storage device.

47 ~~112~~^{44 36}. A method according to claim ~~98~~^{44 36}, wherein at least one member selected from the group consisting of said function F_i , and at least one information element of said new set B, is unknown at least to said sender.

48 113. A method according to claim ^{94 36} 98 or ⁴⁷ 112, wherein said new set B comprises a verifiable digital signature of said subset Si.

49 114. A method according to claim ⁴⁸ 113, comprising a corresponding verification step for said verifiable digital signature, for authenticating at least one of the following: at least one element of said subset Si, and the originator of said digital signature.

50 115. A method according to claim ³⁰ 94, ⁴¹ 98 or 106, wherein said set A comprises a link information element through which other elements selected from the group consisting of said set A and the authentication-information are linked.

51 116. A method according to claim ^{94 30} 98, wherein said function Fi has the property that it is substantially difficult to find a set S' comprising at least one information element, said set S' being different from said subset Si and yet can be used instead, such that applying said function Fi to said set S' will yield said element bi, i.e., such that $F_i(S') = b_i$.

52 117. A method according to claim ^{94 30} 98, wherein said function Fi comprises at least one reversible function, comprising the step of generating a set C which comprises one or more information elements c_1, \dots, c_k , where said set C is expressive as a function I of at least part of said

information element bi, and said function I comprising the inverse function of said reversible function.

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~~118. A method according to claim 94 or 99, comprising the step of verifying the authenticity of an information element purported to match a corresponding element of said set A, said verification step comprising the step of comparing a representation of said purported information element with a representation of at least part of said authentication-information to determine if they match.~~

119. A method according to claim 99, comprising the step of verifying the authenticity of a set Si' comprising one or more information elements which are purported to match the corresponding elements of said subset Si, said verification step comprising the steps of:

generating a new information element bi' comprising a representation of said set Si' which is expressive as said function Fi of the elements of said set Si'; and

comparing a representation of said element bi' with a representation of said element bi to determine if they match.

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55 ~~120~~. A method according to claim ^{94, 30}~~99~~, wherein said function Fi comprises one or more functions ⁴⁸

56 ~~121~~. A method according to claim ~~113~~, wherein said digital signature is generated according to a scheme selected

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from the group consisting of secret-key (symmetric)
cryptosystems and public-key cryptosystems.

57 122. A method according to claim ^{94 36} 94, wherein said new set
B comprises an element generated according to a Time Stamping
Service scheme.

58 123. A method according to claim ³⁰ 94 or ~~99~~, wherein the
step of associating is combined with the step of securing.

59 124. A method according to claim ³⁰ 94, wherein the
activities described by said steps are being performed by an
authenticator, said authenticator being associated with a
party other than said sender.

125. A method of authenticating a dispatch and contents
of the dispatch transmitted from a sender to a recipient,
comprising the steps of:

receiving content data representative of the contents of
the dispatch originated from the sender and being
electronically transmitted to said recipient, and a
destination of the dispatch;

providing an indicia relating to a time of transmission
of the dispatch, said time related indicia being provided in a
manner resistant to or indicative of tampering by either of
the sender and the recipient;

associating the content data with dispatch record data
which includes at least said time related indicia and an

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indicia relating to the destination of the dispatch, to
generate authentication data which authenticate the dispatch
and the contents of the dispatch; and

securing at least part of the authentication data against
tampering of at least the sender.

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61 ~~126~~. A method according to claim ~~125~~, further including
the step of transmitting the contents of the dispatch to the
recipient.

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62 ~~127~~. A method according to claim ~~125~~, further including
the step of providing an output of at least part of the
authentication data.

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128. A method according to claim 125, wherein at least
one of the steps of associating and securing utilizes
mathematical association methods for a selected portion of a
combination of the content data and the dispatch record data.

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63 ~~129~~. A method according to claim ~~125~~, wherein the
mathematical association methods utilize at least one
transform function from a Hiding Class of transform functions.

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64 ~~130~~. A method according to claim ~~125~~, wherein the
mathematical association methods include a method of
generating a digital signature.

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65 ~~131~~. A method according to claim ~~125~~, wherein the step of
providing the time related indicia includes receiving the time
related indicia from an external source.

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64 ~~132~~. A method according to claim ~~125~~, wherein the step of providing the time related indicia includes generating the time related indicia.

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67 ~~133~~. A method according to claim ~~125~~, wherein the step of securing stores at least part of the authentication data in a secure storage device.

⁶⁰
68 ~~134~~. A method according to claim ~~125~~ or ~~128~~, wherein the step of associating is combined with the step of securing.

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69 ~~135~~. A method according to claim ~~125~~, wherein the authentication data further includes a delivery indicia relating to said dispatch.

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70 ~~136~~. A method according to claim ~~125~~, where the activities described by said steps are being performed by an authenticator, said authenticator being associated with a party other than said sender.

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137. An authenticator for authenticating a dispatch and contents of the dispatch transmitted from a transmitting system to a receiving system via an electronic communication network, comprising:

an input unit coupled to the communication network or to the transmitting system for receiving content data representative of the contents of the dispatch being electronically transmitted to said receiving system, and a destination of the dispatch;

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means for providing an indicia relating to a time of transmission of the dispatch, said time related indicia being provided in a manner resistant to or indicative of tampering by either of the sender and the recipient;

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a processor for associating the content data with dispatch record data which includes at least said time related indicia and an indicia relating to the destination of the dispatch, to generate authentication data which authenticate the dispatch and the contents of the dispatch; and

means for securing at least part of the authentication data against tampering of at least the sender.

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72 138. An authenticator according to claim 137, further including an output transmitter coupled to the communication network for transmitting the contents of the dispatch to the receiving system.

71
73 139. An authenticator according to claim 137, further including an output device for providing an output of at least part of the authentication data.

71
74 140. An authenticator according to claim 137, wherein the processor is combined with the means for securing.

141. An authenticator according to claim 137 or 140, wherein the processor utilizes mathematical association methods for a selected portion of a combination of the content

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data and the dispatch record data to generate the authentication data.

75 ^{134 71} 142. An authenticator according to claim ~~141~~, wherein the mathematical association methods utilize at least one transform function from a Hiding Class of transform functions.

76 ^{134 71} 143. An authenticator according to claim ~~141~~, wherein the mathematical association methods include a method of generating a digital signature.

77 ⁷¹ 144. An authenticator according to claim ~~137~~, wherein the means for providing the time related indicia receives the time related indicia from an external source.

78 ⁷¹ 145. An authenticator according to claim ~~137~~, wherein the means for providing the time related indicia generates the time related indicia.

79 ⁷¹ 146. An authenticator according to claim ~~137~~, wherein the authentication data further includes a delivery indicia relating to said dispatch.

80 ⁷¹ 147. An authenticator according to claim ~~137~~, including a secure storage device for securing at least part of the authentication data.

81 ⁷¹ 148. An authenticator according to claim ~~137~~, wherein said authenticator is associated with a party other than said sender, or is resistant to or indicative of tampering by at least said sender.

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149. An information dispatch system in an electronic communication network comprising:

a source transmitting system coupled to the electronic communication network for sending a dispatch;

a destination receiving system coupled to the electronic communication network for receiving the dispatch; and

*AK
and*

an authenticator for authenticating the dispatch and contents of the dispatch transmitted from the source transmitting system to the destination receiving system, including:

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an input unit coupled to the communication network or to the source transmitting system for receiving content data representative of the contents of the dispatch being electronically transmitted to said destination receiving system, and a destination of the dispatch;

means for providing an indicia relating to a time of transmission of the dispatch, said time related indicia being provided in a manner resistant to or indicative of tampering by either of the sender and the recipient;

a processor for associating the content data with dispatch record data which includes at least said time related indicia and an indicia relating to the destination of the dispatch, to generate authentication data which authenticate the dispatch and the contents of the dispatch; and

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means for securing at least part of the
authentication data against tampering of at least the sender.

82 83 150. An information dispatch system according to claim
149, wherein the authenticator further includes an output
device for providing an output of at least part of the
authentication data.

82 151. An information dispatch system according to claim
149, wherein the processor is combined with the means for
securing.

E 82 84 152. An information dispatch system according to claim
149 or 151, wherein the processor utilizes mathematical
association methods for a selected portion of a combination of
the content data and the dispatch record data to generate the
authentication data.

82 85 153. An information dispatch system according to claim
149, wherein the means for providing the time related indicia
receives the time related indicia from an external source.

82 86 154. An information dispatch system according to claim
149, wherein the means for providing the time related indicia
generates the time related indicia.

82 87 155. An information dispatch system according to claim
149, including a secure storage device for securing at least
part of the authentication data.